

Measuring the outcome of contact tracing

1: A description of the patient and contact populations studied

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SUMMARY A standard system for health workers to record and handle information on patients and contacts was introduced to five clinics. Information on all the patients interviewed during the first quarter of 1975 was collected and analysed. An analysis of the characteristics of these patients showed variation between the clinics. However, regardless of what was being measured, there were always differences between men and women. It was found that not all infected patients were interviewed about their contacts. Unless or until contact tracing includes all infected patients, the effect of contact tracing on the control of the sexually transmitted diseases will be of limited value and difficult to assess.

Introduction

Measurement of the effectiveness of contact tracing in the control of sexually transmitted disease is complicated by the difficulty of determining the individuals comprising the population to be investigated. The object of contact tracing is to ensure that all individuals who have had sexual contacts with infected persons seek examination and are treated if necessary. The base population is, therefore, clinic patients known to be infected. A Health Education Council (HEC) project, was begun in 1972 to establish criteria by which effectiveness can be assessed (Mills and Satin, 1976).

A standard system for recording and handling information on the contacts of patients found to have venereal diseases was recommended and introduced to five clinics (Satin, 1977). Information recorded by health workers at these clinics was collected and used to assess results of the contact investigations. This paper describes the patient and contact populations which were the subjects of investigation. It is followed by an evaluation of the outcome of the contact tracing investigations (Mills and Satin, 1978).

Method

The data for this study were extracted from the information recorded by 12 health workers on the

separate documents for patients and contacts which comprise the HEC record system. There was no attempt to evaluate the individual effectiveness of the health workers at the five clinics. Four of the clinics are located in London; the fifth is in Oxford* (Satin, 1977).

The information recorded on the separate documents was coded and transferred to punch cards for analysis. The original records remained in the clinic of origin. For the analysis the computer program and computer time were kindly provided by the DHSS computer centre at New Court, Lincoln's Inn Fields.

The study population was divided into two categories: (1) those patients interviewed by health workers during the period from 1 January to 31 March 1975, and (2) the contacts (sexual partners) named by the patients interviewed. All patients had been diagnosed and found to have gonorrhoea or infectious syphilis, or both.

Results

The number of patients interviewed during the period at each clinic was compared with the number of cases of gonorrhoea and syphilis diagnosed during the same period and reported to the DHSS.

*The clinics taking part were at University College Hospital, London (UCH); St Giles Hospital, London; Middlesex Hospital, London (JPH); St Thomas' Hospital, London (STH); Radcliffe Infirmary, Oxford.

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The difference between the two sets of figures, with one exception, reveals that health workers did not fulfil the expectation of interviewing all diagnosed patients about their contacts.

The total number of contacts named by patients and recorded by health workers comprises the contact population. The number of patients and contacts recorded is presented in Table 2. A total of 1379 infected patients named 2088 contacts.

Table 3 presents the percentage of patients who named no contact, or one or more. More than 50% of both male and female patients at four of the five clinics named only one contact.

Table 1 *Patients diagnosed 1 January–31 March 1975: interviews recorded compared with cases reported*

Clinic	Gender of patients	Total interviewed (recorded by health workers)	Total reported (from DHSS records)
UCH	Male	182	185
	Female	88	96
St Giles	Male	133	153
	Female	76	89
JPH	Male	295	317
	Female	96	117
Radcliffe	Male	59	65
	Female	50	54
STH	Male	255	255
	Female	145	130

Table 2 *Total number of patient and contact records*

	UCH	St Giles	JPH	Radcliffe	STH	Totals
Patients						
Male	182	133	295	59	255	924
Female	88	76	96	50	145	455
Total	270	209	391	109	400	1379
Contacts						
Of male patients	277	201	425	110	425	1438
Of female patients	122	105	139	98	186	650
Total	399	306	564	208	611	2088

Table 3 *Percentage of patients naming one, two, or more contacts*

Clinic	Gender of patients	Percentage of patients naming contacts				Total no. of patients
		None	1 contact	2 contacts	3 contacts or more	
UCH	Male	3	64	26	7	182
	Female	—	71	27	2	88
St Giles	Male	2	56	34	11	133
	Female	3	60	32	4	76
JPH	Male	1	67	24	7	295
	Female	—	67	25	8	96
Radcliffe	Male	—	47	37	16	59
	Female	—	40	38	22	50
STH	Male	1	50	39	10	255
	Female	—	77	20	3	145

The sexual orientation of patients presented in Table 4 was determined by the gender of the contact for each incident of infection. A patient was classified as heterosexual if contacts were of the opposite sex, homosexual if contacts were of same sex, bisexual if both male and female contacts were named.

The number of contacts recorded for each patient is presented in Table 5. The contact index in this table is the mean number of contacts named by patients at interview. The contact index was determined by dividing the number of contacts by the number of patients naming those contacts. Two clinics had comparatively high numbers of male patients naming male contacts. For this reason the contact index takes into account the gender of the patient and that of the contact. However, it should be noted that, as male bisexual patients named both male and female partners, they are represented twice in the table, in both of the rows relating to male patients.

The age of each patient was determined by the recorded date of birth. Excluding pre-pubertal cases (not interviewed by health workers), individuals under 16 years represent less than 1% of the total; three of 904 male patients, and eight of 441 female patients were in this category. There were no boys under 16 treated at UCH, JPH, or the Radcliffe. No girls under 16 were treated at JPH.

Male patients under 20 years of age accounted for only 9% of the total male patient population, in contrast to the number of females under 20 who made up 30% of the females treated. The proportion of females under 20 at the Radcliffe, 43%, was strikingly greater than at the four London clinics—JPH with 23%, UCH with 25%, STH with 30%, and St Giles with 31%. The modal age of female patients at the five clinics was 19. For males the pattern was bi-modal, peaking at 23 and 26 years. The mean age for men was 27·8, for women 23·1.

Table 6 shows differences between the sexes by age.

An analysis of age and sexual orientation of male patients was carried out. More heterosexual patients were shown to be infected at an earlier age than homosexual ones, and this finding was consistent for all five clinics. The pattern was found also in those clinics with the highest proportion of male homosexual patients. Of the 222 male homosexuals, six were under the age of 18, and 25 under the age of 21 years.

Table 7 shows that most patients, men and women, were recorded as single. UCH had proportionately more single male patients than any other clinic, and fewer who were recorded as separated or divorced. St Giles and STH, which are close to each other

Table 4 *Sexual orientation of patients based on gender of partner*

Sexual orientation	UCH		St Giles		JPH		Radcliffe		STH		Total	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
Heterosexual	69	99	83	99	58	100	85	100	82	99	72	99
Homosexual	27	1	9	—	39	—	10	—	16	1	24	1
Bisexual	—	—	2	—	2	—	2	—	2	1	2	1
Not recorded	4	—	6	1	1	—	3	—	—	—	2	1
Total number	182	88	133	76	295	96	59	50	255	145	924	455

Table 5 *Mean number of contacts (contact index) named by clinic patients*

Gender of contact and patient	UCH		St Giles		JPH		Radcliffe		STH	
	No. of contacts	Contact index	No. of contacts	Contact index	No. of contacts	Contact index	No. of contacts	Contact index	No. of contacts	Contact index
Male contacts										
Of male patients	92	1.84	28	2.00	192	1.59	13	1.86	94	2.00
Of female patients	120	1.38	103	1.37	138	1.43	97	1.94	180	1.26
Female contacts										
Of male patients	184	1.47	153	1.35	229	1.88	96	1.88	330	1.54
Of female patients	2	—	1	—	1	—	1	—	5	—
Gender of patient not recorded	1	—	21	—	1	—	1	—	2	—

Table 6 *Comparison of the clinics by age of patient*

Age group (years)	UCH		St Giles		JPH		Radcliffe		STH		Total	
	Males (%)	Females (%)	Males (%)	Females (%)	Males (%)	Females (%)	Males (%)	Females (%)	Males (%)	Females (%)	Males (%)	Females (%)
13-19	7	25	13	31	4	26	18	43	13	30	9	30
20-24	28	41	31	41	29	39	40	33	32	37	30	38
25-29	30	27	18	18	34	24	21	10	25	18	28	20
30-34	16	5	19	5	16	10	7	6	15	8	16	7
35-39	10	2	7	3	9	1	7	4	7	4	8	3
40-44	3	—	8	—	4	—	5	—	4	1	4	1
45-49	4	—	2	1	3	—	—	4	3	1	3	1
50+	2	—	2	1	1	—	2	—	2	—	2	1

geographically and appear to have similar patient populations, had more married female patients than the other three clinics. The Radcliffe had pro-

portionately more women recorded as separated or divorced.

Table 8 shows that there is little variation in employment patterns of patients between clinics.

Table 7 *Marital states of patients*

Clinic	Gender of patient	Percentage of patients			Total no. of patients
		Single	Married	Not recorded/ separated/ divorced/ widowed	
UCH	Male	86	13	1	182
	Female	83	8	9	88
St Giles	Male	72	22	6	133
	Female	70	18	12	76
JPH	Male	76	14	10	295
	Female	89	8	3	96
Radcliffe	Male	68	20	12	59
	Female	70	10	20	50
STH	Male	74	21	5	255
	Female	67	21	12	145

Table 8 *Employment state of patients*

Clinic	Gender of patient	Percentage of patients				Total no. of patients
		Employed	Unemployed	Student	Not recorded	
UCH	Male	82	2	13	3	182
	Female	66	11	19	4	88
St Giles	Male	87	3	7	3	133
	Female	57	32	6	5	76
JPH	Male	81	2	12	5	295
	Female	63	9	21	7	96
Radcliffe	Male	85	5	5	5	59
	Female	62	18	16	4	50
STH	Male	90	3	6	1	255
	Female	66	30	4	—	145

Discussion

The number of patients diagnosed at the clinic determines the parameters of the population of contacts to be investigated. Variation between clinics in achieving the goal of interviewing all diagnosed patients about contacts is documented in Table 1. The evidence that health workers at one clinic were able to interview all diagnosed patients shows that it is possible to achieve that goal. The reasons offered in explanation for failure to interview all patients for the purpose of naming contacts are that:

1. Clinic staff forget or neglect to refer patients.
2. A patient leaves the clinic before interview or otherwise refuses the interview.
3. A doctor chooses not to refer a patient, having decided that the patient has had no sexual partners other than the one who transmitted the infection and should be protected from understanding the implications of the sexual transmission of his/her infection.
4. A health worker is not available owing to understaffing or poor staff management.

A perennial issue in the control of sexually transmitted diseases is the question of how closely the number of contacts identified and recorded (Table 2) reflects the actual number of contacts. The recorded number of contacts is almost certainly an underestimate of the actual contact population. Health workers taking part in this study questioned the instruction to record contact information identifying contacts whom they presumed would be untraceable. It is important to record even the slightest information about each contact in order to arrive at a more accurate estimate of the size of the infected population, indeed, some contacts initially assessed as untraceable subsequently attend a clinic. It was not possible to determine whether the differences between clinic location, clinic opening times, and extent of the catchment area served by each clinic influenced the number of contacts named.

Table 4 reveals differences between the five clinics in the sexual orientation of the patients. The finding that a markedly higher proportion of patients were male homosexuals at UCH and JPH agrees with the findings of the British Cooperative Clinical Group (1973) who found that more homosexually acquired infections were treated in London's West End clinics than in other clinics inside or outside London.

Table 5 shows that the index for male patients naming male partners was consistently higher than the index for those naming female contacts. This was true for each clinic, although it is interesting to note that the lowest contact index was found in the clinic

with the highest proportion of male homosexual patients. In three clinics, males named more female contacts than females named males. At St Giles males and females named about equal numbers and, at the Radcliffe, females named rather more male contacts than males did females. Interpretation of these findings presents problems as it is not possible to determine at the present time whether the variation in indices between clinics is owing to differences in clinic populations, differences in interviewing skill or approach among health workers themselves, or differences in approach of other clinic staff, or to a combination of factors.

Women patients were found to be infected at an earlier age than men, and fewer women were in the older age groups. These findings are strikingly similar to those cited in the report of the Chief Medical Officer (Department of Health and Social Security, 1975). For the first six months of 1975, it was found that boys under 20 years of age accounted for only 12% of the males treated for gonorrhoea. In contrast, the number of girls under 20 made up 34% of all the females treated for gonorrhoea. Fifty-five per cent of the total male patients were aged 25 or over, compared with only 30% of the total female population. It can be concluded that girls under the age of 20 are more likely to be represented in infected populations than boys under 20. This may mean that women who become infected have sexual intercourse at an earlier age than men who become infected. The data suggest that women under the age of 20 are infected by men over the age of 20.

Information on the marital and employment states of patients can be useful in contact linking and patient location. Marital state refers to a legal status, but indicates nothing about cohabiting circumstances. Some patients who are divorced or separated refer to themselves as single, not deliberately to deceive, but because this describes their domestic situation. The data presented on state of employment is of limited reliability because health workers often did not distinguish between employment state and occupation. The higher proportion of students in the clinic population at UCH, JPH, and Radcliffe reflect the location of those clinics in university areas.

Regardless of what was being measured, the following differences were observed between men and women:

1. More men than women were diagnosed and subsequently interviewed;
2. More contacts were named by men than by women, for the total population. However, the exceptions—St Giles where numbers were equivalent and the Radcliffe where women

named more contacts than men—challenge the common assumption that men have more sexual partners than women;

3. Women were more likely to be infected at an earlier age than men, but far fewer women were represented in the older age groups. These findings have implications of high or special at-risk groups.

The use of a standard recording system has made it possible to collect and compare information on clinic patients and their contacts. The results show that not all infected patients are interviewed about their contacts. Unless or until contact tracing is a service which includes all infected patients, the effect of contact tracing in the control of sexually transmitted diseases will be of limited value and difficult to measure and assess.

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